

XXIX. *Descriptions of Indian Gentianeæ.* By DAVID DON, Esq., Libr. L.S.,
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AMONG the numerous families which compose the class of Dicotyledonous plants there is, perhaps, none so equally and generally distributed over the surface of the globe as the *Gentianeæ*, for they are found dispersed throughout the greater part of both hemispheres; and this observation applies not to the entire family only, but likewise to many of the smaller groups, as may be seen by consulting the table which precedes the descriptive part of this paper.

In comparing the Floras of different countries, we shall find that what has been just stated with respect to their equal distribution is fully borne out by facts, at least in the Northern hemisphere, whose vegetable riches have been more completely investigated, and that they form about the proportion of $\frac{1}{96}$ th of the phænogamous vegetation. In the Swiss Flora, which comprises 2000 phænogamous plants, 26 are of this family; in the Siberian Flora, of 1700 phænogamous plants, 21 are *Gentianeæ*; in that of the Caucasus and Crimea, in 2000 there are 20; in Peru and Quito, the phænogamous plants of which may be estimated at 4500, there are 43 *Gentianeæ*; and in the North American Flora there are 55 out of 4081 phænogamous plants.

By the indefatigable researches of Dr. Wallich and Dr. Royle, the number of species of this family belonging to the Indian Flora has been more than doubled, and they now amount to about 50. Of the 14 genera into which they have been distributed, *Canscora*, *Exacum*, *Slevogtia*, *Crawfurdia*, *Ophelia*, and *Agathotes* are exclusively Indian, and the remaining 7 are common also to the European and Northern Asiatic Floras. Of these 50 species, 34 belong to the Alpine Flora, which in 3500, the number at which the phænogamous plants of the Flora of Northern India may be estimated, will give a larger proportion than that above mentioned.

Although the *Gentianeæ* undoubtedly constitute a very natural family, agreeing remarkably in their habit and structure, and also in their sensible properties, they afford very few absolute marks to distinguish them from the other families to which they are related. When taken in an extended sense, the *Gentianeæ* may be said to hold an intermediate station between *Apocynæ* and *Rubiaceæ*, differing from the former, to which they are more intimately allied, in the larger quantity of albumen, and in the much greater development of their embryo; from the latter in their free ovary, and from both by their persistent corolla, and in the nervation of their leaves. We may compare *Crawfordia* with *Gelsemium*, of which it possesses the twining habit and most of the characters, but the latter is essentially distinguished by its penninerved leaves, deciduous corolla, and concrete carpels, which unite it to *Apocynæ*. Some species of *Lisianthus* resemble *Allamanda* in their woody stem and in the structure of their flower, and the twisted æstivation of *Apocynæ* occurs also in *Erythræa* and *Gentiana contorta*. There is an evident affinity between the Rubiaceous genus *Oldenlandia* and *Mitrasacme*, which also accords in many respects with *Spigelia* and *Mitreola*, but it differs in the imbricate æstivation of its corolla. Seeing, however, the near approach to the valvate form of æstivation in *Slevogtia*, and that *Spigelia* and *Mitreola* agree with *Gentianeæ* in habit, I am led to question the propriety of considering them in any other light than as forming a subordinate group of that family. The genus *Canscora*, by its irregular flowers, and by its resemblance in habit to certain *Gratiolæ*, especially to *Torenia*, would seem to establish a relationship between the *Scrophularinæ* and this family.

The essential characters of *Gentianeæ* consist in their persistent usually plicate corolla; in the two carpels composing the pericarpium being placed right and left with respect to the axis of the flower; and lastly, in the nervation of their leaves, which bears a considerable resemblance to that of Monocotyledonous plants. These characters only apply to the normal *Gentianeæ*, and necessarily exclude the three small groups of *Spigeliaceæ*, *Loganiaceæ*, and *Potaliaceæ*, which Dr. von Martius has proposed to separate from them. In all these, however, the relation of the carpels to the axis of the flower is the same as in *Gentianeæ*, but they have all a deciduous corolla, and in the last two the leaves are penninerved. Another group, the *Menyantheæ*, consisting of

Menyanthes and *Villarsia*, has been recently separated from *Gentianeæ* on account of their alternate lobed or crenated leaves, characters which appear to arise from the peculiar circumstances under which the plants live, and perhaps of as little importance as the entire absence of those organs in the parasitical genera *Vohiria* and *Leiphaimos*; and the arrangement of the leaves is of less importance, since they are alternate in two species of *Swertia*.

I had formerly proposed (Edinb. Phil. Journ., July 1831, p. 275,) to refer the remarkable genus *Desfontainia** to the *Gentianeæ*, but from the circumstance of its possessing a multilocular ovary, deciduous corolla, with imbricate æstivation, undivided stigma, opposite, spinously toothed, penninerved leaves, it is evident that the view which I then took of its affinities was erroneous; and I think it not improbable that it will be found to be more nearly related to *Ericaceæ* than to any other family. In my description I have described the berry as unilocular, with 4 or 5 parietal placentæ, but I now find that it has the cells complete, and is therefore multilocular. The structure and position of the anthers are very different from that of *Ericaceæ*, and bring the genus nearer to *Gentianeæ*; but I am inclined to regard it as the type of a group, alike distinct from these families as well as from *Solanaceæ*, with which it has also been associated.

I have confined myself in this paper to the description of the species collected by Dr. Royle, who has liberally placed in my hands that portion of his herbarium for this purpose, and some of the more remarkable species will be found represented in his interesting work on the Botany of the Himalayan Mountains. In the arrangement of the species I have adopted some of the divisions of the Linnæan genus *Gentiana*, first suggested by Renealmus, and

* My learned friend Sir William Jackson Hooker, in the first number of his interesting and useful work, "*Icones Plantarum*," has published a figure of what I have long considered to be a third species of this genus, and which was first collected by my excellent friend Captain Phillip Parker King, R.N., in the Straits of Magellan and in the archipelago of Chiloë, and for which I beg to propose the following name and character:

D. fulgens, foliis cuneato-oblongis dentato-spinosis glabris subtus glaucis: dentibus divaricatis, segmentis calycinis oblongis ciliatis, corollâ calyce 5-plò longiore.

Desfontainia spinosa. Hook. *Ic. Plant. t. 33. haud aliorum.*

The three species, although nearly related, are nevertheless essentially different in their leaves, calyx, and in the proportions of their corolla.

since adopted and confirmed by Borckhausen, Schmidt and others. I am aware much difference of opinion exists with respect to the multiplication of genera, but in the present instance, as the species will be found grouped much more naturally than in any method hitherto pursued in general systematic works, those who object to them as genera will see the advantage of adopting them as sections. Considering the many regions, especially in the southern hemisphere, that are yet but partially explored, it is not intended that the accompanying table should be taken as a complete view of the geographical distribution of this family, but only as exhibiting an approximation to one hereafter to be filled up by the discoveries of future travellers. The names of several genera occur in that table, which are not recorded in any of the systematic works yet published: for an account of these I beg to refer to the fourth volume of my brother's "General System of Gardening and Botany." I ought to notice, that some errors have crept into that account in transcribing from my notes, and from the circumstance of my not having had an opportunity of seeing the proof-sheets; but most of these errors will be found corrected in the present memoir. I am now disposed to refer *Selatium* and *Eudoxia* to *Gentiana*, and to consider them as forming two sections of that genus than as groups of a higher value, and *Ulostoma fimbriatum* may be regarded as constituting a section of *Gentianella*, only differing in the whole of the inside of the tube of the corolla being clothed with filamentous appendages. The *Selatium multicaule* appears to connect *Selatium* and *Gentiana*. The genus *Glyphospermum* is remarkable on account of its ligneous stem and its apparently monoecious flowers.

TABLE showing the Geographical Distribution of the Normal Gentianæ.

	N. of Europe.	Central Eu- rope.	S. of Europe.	Caucasus.	Siberia.	Kamtschatka.	N. India.	Central and South India.	China.	Japan.	Java.	Van Diemen's Land.	New Zealand.	Arabia.	Abyssinia.	Cape of Good Hope.	Madagascar.	Canary Islands.	United States and Canada.	California.	Mexico.	West Indies.	New Granada.	Pernu and Guito.	Guliana.	Brazil.	Chile.	Strait of Magellan.	Total No.
1. Gentiana	1			1	1	2?	3					1	2						2?				1	15				1	30
2. Coilantha		7				1														6								10	
3. Pneumonanthe		2		2	3		3													4		1						17	
4. Erica.....	1	10	2	1	2				1	1																		35	
5. Eurythalia	1	7		1			3																					15	
6. Selatun																												8	
7. Eudoxia																												2	
8. Gentianella	2	1		1	1														1			1						7	
9. Ulostoma																												2	
10. Asteris		2																										1	
11. Fraxera																												2	
12. Swertia		1			1	1?	5				1?								2?									12	
13. Agathotes							1																					2	
14. Halenia					1		2												1		4		2					7	
15. Ophelia							5	2																				4	
16. Pleurogyne	1	1			2																							2	
17. Glyphospermum																												4	
18. Centaurella																			3			1						3	
19. Schultesia																												4	
20. Callopisma																												1	
21. Tachia																												1	
22. Prepura																												1	
23. Chlora.....		1	2																									3	
24. Hippion																												1	
25. Canscora							3	5																				6	
26. Vohiria																												2	
27. Leiphaimos.....																												1	
28. Enicostema.....																												1	
29. Crawfordia.....							2		1																			4	
30. Coutoubea																												5	
31. Silevogtia								1																				1	
32. Schubleria																												6	
33. Hella																												2	
34. Chironia.....																												11	
35. Rosinia																												1	
36. Erythra		6	15		1		1		1																			29	
37. Sabbatia																												1	
38. Lisianthus																												10	
39. Iribachia.....																												35	
40. Symbolanthus...																												1	
41. Eustoma																												2	
42. Sebea																												10	
43. Exacum							2	10																				14	
44. Microcale		1																										3	

Species common to Northern and Central Europe..... 10
 Ditto ditto Western Europe and Caucasus 9

Northern Hemisphere..... 240
 Southern Hemisphere 97

Total number of Species... 337

Intertropical..... 144

Extratropical 193

Total number of Species 337

Gen. I. GENTIANA. *Borck., Brown.*

Calyx 4—5-fidus. *Corolla* campanulata v. infundibuliformis, limbo 4—5-fida : *sinibus* non productis. *Antheræ* liberæ. *Stigma* sessile, bilobum. *Capsula* 1-locularis. *Semina* parietalia, immarginata, lævia.

Herbæ (per orbem ferè ubique sparsæ) *annuæ* v. *perennes*, *floribus subsolitariis aut corymbosis*.

1. *G. contorta*, annua; floribus solitariis, corollâ infundibuliformi 4-lobâ : lobis lineari-oblongis obtusis æstivatione convolutis, dentibus calycinis lanceolatis acuminatis, foliis ellipticis obtusis 5-nerviis subsessilibus.

Gentiana contorta. *Royle Ill. p. 278. t. 69. f. 3.*

Habitat in Emodi montibus ad Mussooree. *Royle.* ☉. Fl. tempore pluviarum.

Radix fibrosa. *Canlis* erectus, ramosus, teres, purpurascens, 5-pollicaris. *Folia* opposita, subsessilia, elliptica, obtusa, 5-nervia, glaberrima, subtùs pallidiora, pollicaria, basi angustata. *Flores* terminales, solitarii, brevissimè pedunculati, ebracteati. *Calyx* turbinato-tubulosus, 4-fidus : *laciniis* lanceolatis, acuminatis, erectis, carinatis. *Corolla* infundibuliformis, calyce longior, lilacina, fauce nuda, limbo 4-loba : *lobis* lineari-oblongis, obtusis, æstivatione convolutis. *Stamina* 4, inclusa : *filamenta* subulata : *antheræ* subrotundo-ovatæ, obtusæ. *Ovarium* obfusiforme, infernè attenuatum. *Stylus* nullus. *Stigma* bilobum, minutè papillosum.

I regret that I have seen no specimen of this remarkable plant, those collected by Dr. Royle having been either lost or mislaid; the foregoing description, therefore, is necessarily very imperfect, having been wholly derived from the drawing taken at Mussooree, where the plant was first observed by Dr. Royle.

The form of the ovarium, and the sessile stigma, as well as the naked corolla, have induced me to place the species in this group: but its situation in the family must remain doubtful until the plant is examined.

The twisted æstivation of its corolla, analogous to that of the *Apocynæ*, and the apparent presence of four imperfect stamens, incline me to suspect that it may prove to be the type of a distinct genus.

** *Annua*, corollâ tubulosâ, staminibus sinibus corollæ insertis, stigmatibus filiformibus, capsulâ oblongâ apice simplici, seminibus compressis.

2. *G. canaliculata*, caulescens, erecta, ramosa; segmentis calycinis cuneatis mucronatis, corollæ lobis ovatis acutiusculis, foliis ovato-lanceolatis obtusis margine scabris.

Gentiana canaliculata. Royle MSS. *G. Don Syst. Gard. & Bot.* iv. p. 182.

Habitat in Cashmeriâ. Royle. ☉.

Radix subfusiformis, flava, copiosè fibrosa, annua. *Caulis* strictus, ramosus, bisulcus, spithamæus v. pedalis. *Folia* sessilia, ovato-lanceolata, obtusa, membranacea, sub-5-nervia, margine oculo armato scabra, basi distincta, nec connata, pollicaria v. sesquipollicaria. *Flores* axillares et terminales, racemoso-paniculati. *Pedunculi* filiformes, bisulci, vix unciales. *Calyx* amplus, membranaceus, profundè 4—5-partitus: *laciniis* obovatis, abruptè acuminatis, subæqualibus, margine copiosè papillois. *Corolla* dilutè cœrulea, calyce longior, tubulosa, glaberrima, limbo 4—5-loba: *lobis* ovatis, acutiusculis. *Stamina* 4 v. 5, sinibus corollæ inserta: *filameuta* subulata, brevissima: *antheræ* oblongæ, incumbentes, 2-loculares, cyaneæ. *Stigmata* filiformia, truncata, recta, minutè papillosa. *Capsula* ovato-oblonga, compressa, membranacea, brevissimè stipitata. *Semina* parietalia, grandiuscula, hinc convexa, inde exsculpta, spadicea, glabra.

Gen. I. PNEUMONANTHE. Schmidt.

DASYSTEPHANA et CIMINALIS. Borck.

GENTIANÆ SP. L.

Calyx tubulosus, 5-dentatus. *Corolla* infundibuliformis v. campanulata, 5-loba: *sinibus* plerumque in lobos productis. *Antheræ* oblongæ, sæpiùs coalitæ. *Stigma* bipartitum. *Capsula* 1-ocularis. *Semina* parietalia, scobiformia, margine alata.

Herbæ (Hem. Bor.) *perennes*, *floribus* *subsolitariis* *speciosis* *plerumque* *cæruleis*.

* *Corollæ sinibus in lobos productis, antheris liberis.*

1. *P. Kurroo*, caulescens, subuniflora; dentibus calycinis elongatis subulatis,

corollâ campanulatâ: lobis acutis, foliis obtusis; radicalibus elongato-lanceolatis; caulinis linearibus.

Gentiana Kurroo. *Royle Ill. t. 68. f. 2.*

Habitat in Emodi montibus ad Mussooree et Kuerkoolee loca vernaculè dicta.

Royle. 4. Fl. Octobri et Novembri. Kurroo *indigenis*.

Planta perennis, cæspitosa. *Radix* longa, ramosa, flava, collo bipollicari foliorum emarcidorum basibus fuscis oblecto. *Caules* plures, assurgentes, filiformes, purpurascens, 1—3-flori, palmares v. spithamæi, nunc pedales, filo emporético vix crassiores. *Folia radicalia* plurima, conferta, erecto-patentia, lanceolata, obtusa, coriacea, glabra, viridia, subtus obscure 3-nervia, margine parùm recurvata, infernè angustata, imâ basi tamen dilatato-membranacea, 4—5-uncialia, semipollicem circiter lata; *caulina* recurvato-patentia, linearia, obtusa, margine recurva, sesquiuncialia, basi in vaginam unguicularem connata. *Calyx* tubulosus, 5-dentatus, interstitiis membranaceis: *dentibus* subulatis, erectis, tubum subæquantibus. *Corolla* infundibuliformi-campanulata, azurea, calyce duplò longior, sesquipollicaris, limbo 5-loba; *lobis* ovatis, acutis, sinibus prominentibus acutis integris. *Filamenta* canaliculata, basi dilatata. *Anthæræ* oblongæ, obtusæ, incumbentes, biloculares, flavæ. *Ovarium* fusi-forme, pedicellatum. *Stigma* bipartitum: laciniis ligulatis. *Capsula* 1-locularis, 2-valvis, polysperma. *Semina* parietalia, subacicularia, fusca, apice truncata umbilicata, alterâ extremitate alata.

This fine species comes very near to *P. adscendens*, which is chiefly distinguished by its acute leaves, more numerous flowers, thrice shorter calycine teeth, and by the blunt lobes of the corolla. Its root, which is intensely bitter, is used as a tonic and febrifuge by the natives. This genus is principally distinguished from *Gentiana*, as now limited, by its deeply-parted stigma, winged seeds, and by the presence of accessory appendages alternating with the lobes of the corolla.

2. *P. depressa*, subcaulis, cæspitosa, uniflora, surculosa; dentibus calycinis ovato-lanceolatis mucronatis, corollâ campanulatâ: lobis integerrimis aristatis, foliis lanceolatis mucronatis margine scabris; surculinis obovatis.

Gentiana depressa. Don Prodr. Fl. Nep. p. 125. Wall. Cat. n. 4387.

Ericala depressa. Nob. in G. Don Syst. Gard. & Bot. iv. p. 189.

Habitat in Emodi montibus ad Shalma. Royle. 4. Fl. Octobri.

Planta perennis, depressa, cæspitosa, acaulis, nunc surculosa. *Radix* fibrosa, fibris longis attenuatis tuscis. *Surculi* plures, procumbentes, filiformes, bipollicares, undique minutè papulosi, quandoque floriferi. *Folia radicalia* in rosulis aggregata, patentia, lanceolata, mucronata, glauco-viridia, margine cartilaginea ac papuloso-seabra, subtùs carinata, semuncialia; *surculina* duplò breviora, obovata, margine copiosius papulosa, basibus angustatis atque in vaginam caule ipso ampliorem connatis. *Flos* terminalis, solitarius, omninò sessilis. *Calyx* tubulosus, 5-fidus: *laciniis* ovato-lanceolatis, mucronatis, erectis, carinatis, margine apiceque cartilagineis, sinibus membranaceis. *Corolla* uncialis, infundibuliformi-campanulata, pallidè cærulea, fasciis atro-violaceis notata, limbo 5-loba: *lobis* rotundatis, mucronato-aristatis, margine involutis, integerrimis: *sinibus* dilatatis, membranaceis, albis, in lobos rotundatos, obtusos, muticos productis. *Filamenta* canaliculata, glabra, infernè membranaceo-dilatata. *Antheræ* lineari-oblongæ, obtusæ, biloculares, incumbentes. *Ovarium* fusiforme, stipitatum. *Stylus* elongatus. *Stigma* bipartitum: *laciniis* lanceolatis, mucronulatis, concavis, minutè papillosis. *Capsula* elliptica, membranacea, longè stipitata, 1-locularis, 2-valvis. *Semina* parietalia, testâ laxâ, corrugatâ, membranaceo-alata.

This is a very distinct species, and there is none with which it can well be compared. In habit it resembles a good deal the *Ericala altaica*.

Gen. II. ERICALA. Renealm.

ERICOILA. Borck.

HIPPION. Schmidt.

GENTIANÆ SP. L.

Calyx 5-fidus. *Corolla* tubulosa v. hypocrateriformis, 4—5-fida: *sinibus* plurimisque in lobos productis. *Stylus* elongatus. *Stigmata* 2, distincta, dila-

tata. *Capsula* 1-locularis. *Semina* parietalia, oblonga, angulata, immarginata.

Herbæ (Hem. Bor.) *perennes v. annuæ, floribus solitariis v. subcorymbosis, aut fasciculatis.*

* *Annuæ, corollâ tubulosâ, sinibus in lobos productis, capsulâ cuneatâ compressâ stipitatâ apice cristatâ.*

1. *E. capitata*, caulescens, simplex; foliis ovatis, floribus aggregatis, dentibus calycinis ovatis mucronatis recurvis, corollæ lobis obtusis: sinibus crenatis.

Ericala capitata. Nob. in *G. Don Syst. Gard. & Bot.* iv. p. 193.

Gentiana capitata. Ham. in *Don Prodr. Fl. Nep.* p. 126.

G. marginata. Wall. *Cat.* n. 4391.

Habitat in Emodi montibus ad Mussooree in rupibus. *Royle.* ☉. Fl. Septembri.

Radix fibrosa, annua. *Caulis* erectus, simplicissimus, purpureus, angulis parùm elevatis sed vix alatis notatus, infernè nudus, apice foliosus. *Folia* petiolata, ovata, mucronata, rariùs obtusiuscula, coriacea, lævia, integerrima, viridia, subtùs pallidiora, vix uncialia. *Flores* numerosi, terminales, sessiles, aggregati. *Bracteæ* foliaceæ, sessiles, ovatæ, mucronatæ, circum flores involucrium mentientes. *Calyx* infundibuliformis, membranaceus: *laciniis* ovatis, carinatis, apice spinuloso-mucronatis, tortuosis, recurvis, margine scariosis. *Corolla* dilutè cœrulea, infundibuliformis, calycem parùm excedens, limbo 5-loba: *lobis* ovatis, muticis, margine involutis: *sinibus* rotundatis, crenatis, membranaceis, brevissimis. *Stamina* longè inclusa: *filamenta* capillaria: *antheræ* lineari-oblongæ, incumbentes, biloculares. *Stigmata* semicylindrica, spiraliter revoluta, minutè papillosa. *Capsula* cuneata, compressa, crustacea, apice carinâ callosâ cristata. *Semina* parietalia, exigua, ovata, spadicea.

2. *E. argentea*, acaulis; foliis calycibusque lanceolatis mucronatis conduplicatis recurvis margine scariosis, floribus fasciculatis, corollæ lobis ovatis acuminatis.

Ericala argentea. Nob. in *G. Don Syst. Gard. & Bot.* iv. p. 192.

Gentiana argentea. *Royle MSS.*

Habitat in Emodi montibus ad Mussooree. *Royle.* ☉. Fl. Aprili.

Planta annua, è ramis brevissimis congestis foliosis fasciculata, uncialis v. sesquiuncialis. *Radix* filiformis, extremitate ramoso-fibrosa. *Folia* conferta, sessilia, undique recurvato-patentia, lanceolata, setaceo-mucronata, conduplicata, carinata, cartilaginea, glabra, argentea, nitida, semuncialia, margine scarioso-membranaceo, albo, tenuissimè serrulato. *Flores* copiosi, sessiles, aggregati, bracteati. *Calyx* tubulosus, 5-fidus: *laciniis* bracteisque lanceolatis, setaceo-mucronatis, recurvato-patentibus, conduplicatis, carinatis, squarrosis, margine latiore scarioso-membranaceo. *Corolla* tubulosa, dilutè cœrulea, calycis longitudine, limbo 5-loba: *lobis* ovatis, acuminatis, margine supernè involutis: *sinubus* in lobos breviores, ovatos, obtusos, integros, membranaceos productis. *Stamina* inclusa: *filamenta* subulata: *antheræ* lineares, incumbentes, biloculares. *Ovarium* cuneato-oblongum, subsessile, apice breviter alatum. *Stylus* filiformis, elongatus. *Stigmata* linearia, obtusa, minutè papillosa.

3. *E. marginata*, caulescens, ramosa; foliis lanceolatis mucronulatis planis margine cartilagineis, floribus fasciculatis, dentibus calycinis ovato-lanceolatis mucronatis erectis, corollæ lobis obtusis: *sinubus* acutis.

Ericala marginata. *Nob. in G. Don Syst. Gard. & Bot.* iv. p. 192.

Habitat in Cashmeriâ. *Royle.* ☉.

Radix fibrosa, annua. *Caulis* erectus, ramosus, foliosus, uncialis v. biuncialis.

Folia sessilia, lanceolata, mucronulata, coriacea, lævia, unicostata, basi connata, margine albo-cartilaginea, vix uncialia. *Flores* subsessiles, fasciculati. *Bractææ* lanceolatae, mucronulatæ, margine apiceque cartilagineæ. *Calyx* tubulosus, unguicularis, 5-dentatus: *dentibus* ovato-lanceolatis, mucronatis, erectis, margine scariosis. *Corolla* cyanea, calyce longior, tubulosa, limbo 5-loba: *lobis* ovalibus, obtusis; *sinubus* paullò minoribus, acutis, integris, membranaceis. *Stamina* inclusa: *filamenta* complanata, infernè dilatata: *antheræ* oblongæ, incumbentes, luteæ. *Ovarium* fusiforme, membranaceum. *Stylus* elongatus, dimidii ovarii longitudine. *Stigmata* oblonga, plana, obtusa, minutè papillosa.

4. *E. decemfida*, caulescens, ramosa; dentibus calycinis subulatis mucronatis rectis, corollæ lobis lanceolatis acuminatis: sinubus bidentatis, foliis radicalibus ovatis mucronatis maximis; summis subulatis.

Ericala Royleana. *G. Don Syst. Gard. & Bot.* iv. p. 192.

Gentiana decemfida. *Ham. in Don Prodr. Fl. Nep.* p. 126. *Wall. Cat. n.* 4392.

G. Royleana. *Wall. Cat. n.* 4393.

Habitat in Emodi montibus ad locum Khiree Pass vernaculè dictum. *Royle*. ☉. Fl. Aprili.

Radix fibrosa, annua. *Caulis* erectus, ramosissimus, filiformis, gracilis, purpureus, flexuosus, 2—6-uncialis. *Folia radicalia* pauciora, maxima, patula, ovata, mucronato-aristata, sessilia, plana, 3-nervia, glabra, suprà viridia, subtùs glauca, basi angustiora, ferè uncialia, vix semipollicem lata; *caulina* lineari-lanceolata, acuminato-mucronata, conduplicata, basi connata, margine carinâ apiceque cartilagineis minutissimèque denticulatis; *superiora* subadpressa, subulata. *Flores* copiosi, solitarii, pedicellati. *Calyx* tubulosus: *laciniis* elongatis, subulatis, setaceo-mucronatis, strictis, æqualibus. *Corolla* tubulosa, 5-fida, calyce duplò longior: *lobis* lanceolatis, acuminatis; *sinis* duplò brevioribus, obtusis, bidentatis, membranaceis. *Stamina* inclusa: *filamenta* capillaria: *antheræ* oblongæ, incumbentes, biloculares. *Ovarium* compressum. *Stigmata* 2, teretia, revoluta, minutè papillosa. *Capsula* cuneata, compressa, coriacea, breviter stipitata. *Semina* parietalia, minuta, ovoidea, fusca.

5. *E. pedicellata*, caulescens, ramosissima; dentibus calycinis lanceolatis mucronatis revolutis, corollæ lobis ovatis acuminatis: sinubus integris, foliis lanceolatis acuminatis, capsulâ longè stipitatâ.

Ericala procumbens. *G. Don Syst. Gard. & Bot.* iv. p. 192.

Gentiana pedicellata. *Wall. Cat. n.* 4394.

β. Foliis subæqualibus.

Habitat in Emodi montibus in convalli Deyra et ad Mussooree: β. in Kuna-wur. *Royle*. ☉. Fl. Septembri et Octobri.

Radix filiformis, extremitate ramoso-fibrosa, annua. *Caules* plurimi, filiformes, ramosissimi, procumbentes, foliosi, 1—3-pollicares. *Folia radicalia* aggregata, patentia, lanceolata, acuminata, plana, 3-nervia, basi attenuata,

subpetiolata, sesquipollicaria; *caulina* multò minora, mucronata, immarginata, patentia, sessilia, basi connato-vaginata. *Flores* pedicellati, subaggregati. *Calyx* tubulosus: *laciniis* lanceolatis, mucronatis, recurvato-patentibus, immarginatis. *Corolla* tubulosa, limbo 5-loba: *lobis* ovatis, acuminatis; *sinüs* rotundatis, obtusis, brevissimis. *Stamina* inclusa: *filamenta* subulata: *antheræ* lineares, incumbentes, 2-loculares. *Stylus* brevis, compressus. *Stigmata* semicylindrica, revoluta. *Capsula* cuneata. ancipiti-compressa, longè stipitata, apice alâ angustâ membranaceâ erosè crenulatâ cristata. *Semina* parietalia, elliptica, fusca.

The Siberian *E. aquatica* is closely allied to this species, being distinguished from it solely by its obovate leaves with a cartilaginous border, erect calycine teeth, and by the lobes of the corolla being pointless. They both agree in having the capsule elevated on a long stalk.

Gen. III. EURYTHALIA. *Reenealm., Borck.*

HIPPION ex parte. *Schmidt.*

GENTIANÆ SP. L.

Calyx 4—5-fidus. *Corolla* hypocrateriformis, limbo 4—5-fida: *fauce* fimbriato-barbatâ. *Stigma* bifidum. *Capsula* 1-locularis. *Semina* parietalia, subrotunda, immarginata, lævia.

Herbæ (europææ v. asiaticæ) *annuæ, floribus solitariis v. corymbosis.*

Well distinguished from the preceding group by the fringed throat of its corolla. This fringe, composed of a series of narrow linear segments, is not to be confounded with the accessory lobes, but is clearly of the same nature with the fringed glands found at the base of the petals of *Swertia* and *Agathotes*.

1. *E. coronata*, breviter caulescens; floribus aggregatis, corollâ 10-lobâ: lobis sinubusque subæqualibus ovatis uniformibus, foliis lanceolatis acutis margine cartilagineis.

Ericala coronata. *G. Don Syst. Gard. & Bot.* iv. p. 193.

Gentiana coronata. *Royle Ill. t.* 68. *f.* 1.

Habitat in Emodi montibus ad Kedarkanta. *Royle.* ☉.

Planta fasciculata, depressa, subacaulis, pollicaris v. tripollicaris. *Radix* filiformis, annua, extremitate ramoso-fibrosa. *Folia* conferta, sessilia,

patula, lanceolata, acuta, obsoletè 3-nervia, margine cartilaginea, semi- v. pollicaria. *Flores* aggregati, sessiles. *Bracteæ* lanceolatae, mucronulatae, membranaceae, basi connatae. *Calyx* tubulosus, 5-dentatus: *dentibus* ovatis, mucronulatis, erectis, margine scariosis. *Corolla* tubulosa, calyce longior, cyanea, limbo patula, 10-loba; *fauce* annulo finibriato e ciliis linearibus acutis planis composito coronatâ: *lobis* ovatis, obsoletè mucronulatis; *sinûs* conformibus, vix brevioribus. *Stamina* inclusa: *filamenta* subulata, basi dilatata: *antheræ* oblongae, incumbentes. *Ovarium* ovale. *Stylus* elevatus. *Stigmata* semicylindrica, obtusa, revoluta, minutè papillosa.

This very elegant little alpine species has the corolla regularly ten-cleft, from the accessory lobes being equal and uniform with the primary ones. The flowers are crowded and of a deep blue.

2. *E. carinata*, caulescens, simplex; foliis lanceolatis mucronatis carinatis, floribus fasciculatis, corollâ 10-lobâ: lobis lanceolatis acuminatis; sinûs duplò brevioribus argutè denticulatis.

Ericala carinata. G. Don *Syst. Gard. & Bot.* iv. p. 189.

Habitat in Emodi montibus ad Mussooree. Royle. ☉?

Radix fibrosa, annua? *Caulis* erectus, teres, purpurascens, sesquipollicaris.

Folia sessilia, conferta, lanceolata, mucronata, conduplicata, subtùs carinata, semuncialia, imâ basi connata, carinâ margineque cartilagineis. *Flores* terminales, complures, aggregati, subsessiles, bracteati. *Calyx* tubulosus, 5-fidus: *laciniis* linearibus, mucronatis, erectis, margine scariosis. *Corolla* infundibuliformis: *fauce* ciliis setaceis albis pluriserialibus barbatâ: limbo 5-lobo: lobis lanceolatis, acuminatis; sinûs duplò brevioribus, argutè denticulatis. *Stamina* inclusa: *filamenta* capillaria, glabra: *antheræ* lineares, incumbentes. *Stigmata* revoluta, minutè papillosa. *Capsula* cuneato-oblonga, apice alata.

3. *E. pedunculata*, caulescens, ramosa, diffusa; pedunculis elongatis filiformibus unifloris, corollâ 5-fidâ calyce ter longiore, laciniis calycinis ovatis obtusiusculis.

Gentiana pedunculata. Royle MSS. G. Don *Syst. Gard. & Bot.* iv. p. 182.

Habitat in Cashmeriâ et Kunawur. Royle. ☉.

Radix fibrosa. *Caulis* diffusè ramosissimus, bicanaliculatus, 3—5-uncialis. *Folia* sessilia, ovato-oblonga, obtusa, membranacea, unguicularia, basi distincta; *inferiora* spathulata; *superiora* ovata. *Pedunculi* filiformes, stricti, uniflori, sesqui- v. tri-pollicares. *Calyx* profundè 5-partitus: *segmentis* foliaceis, ovato-oblongis, obtusiusculis, inæqualibus; *lateralibus* 2 duplò majoribus. *Corolla* tubulosa, azurea, calyce ter longior: *fauce* intùs annulo fimbriato e ciliis angustè linearibus acutis composito coronatâ: *limbo* 5-lobo, erecto: *lobis* ovatis, obtusis; *sinubus* non productis. *Stamina* tubo inserta: *filamenta* canaliculata: *antheræ* oblongæ, incumbentes, 2-loculares. *Ovarium* oblongum, sessile. *Stigmata* obtusa, brevissima, minutè papillosa. *Capsula* subcylindræa, membranacea. *Semina* parva, subrotunda, fulva, punctis excavata.

This affords another striking example of the great similarity that prevails between the vegetation of the Himalaya and that of Siberia. It comes so very near to *E. dichotoma* from the latter country, as to be hardly distinguishable, differing only in the blunt segments of its calyx, and longer corolla.

Gen. IV. CRAWFURDIA. *Wall.*

Calyx tubulosus, 5-dentatus. *Corolla* infundibuliformi-campanulata, 5-loba. *Glandulæ nectariferæ* 5 hypogynæ. *Stigmata* 2, distincta, subfiliformia. *Capsula* stipitata, compressa, crustacea, 1-ocularis. *Semina* marginalia, suborbiculata, compressa, marginata.

Herbæ (himalenses) *perennes*. *Caules volubiles!* *Folia opposita, petiolata, 3—5-nervia*. *Flores axillares, magni, speciosi, cærulei v. albi*.

In structure this genus comes near to *Pneumonanthe*, but differs in its twining habit, filiform stigmas, and compressed orbicular seeds attached to the margin of the valves. It has entirely the habit of *Gelsemium*, and affords a beautiful example of the intimate relationship subsisting between *Gentianææ* and *Apocynææ*.

1. *C. speciosa*, foliis ovatis acuminatis 5-nerviis, pedunculis solitariis subnudis, dentibus calycinis abbreviatis, capsulâ ellipticâ stipite brevior.

Crawfurdia speciosa. *Wall. Tent. Fl. Nep. p. 64. t. 48; Cat. n. 4371.*

Habitat in Emodi montibus ad Surkunda. *Royle. 4. Fl. Augusto.*

2. *C. fasciculata*, foliis lanceolatis acuminatis 3-nerviis, pedunculis subaggregatis bibracteatis, dentibus calycinis subulatis elongatis, capsulâ obovatâ stipite ter longiore.

Crawfordia fasciculata. *Wall. Tent. Fl. Nep. p. 63. t. 47.; Cat. n. 4369.*

C. affinis. *Wall. Cat. n. 4370.*

Gentiana volubilis. *Don Prodr. Fl. Nep. p. 126.*

Habitat in Nepaliâ. Wallich. 2.

Gen. V. SWERTIA.

SWERTIÆ SP. L.

Calyx profundè 5-partitus. *Corolla* 5-partita, rotata, persistens: *segmentis* basi biglandulosis: *glandulis* dilatatis, callosis, margine fimbriatis. *Stigma* bilobum. *Capsula* compressa, crustacea, 1-ocularis. *Semina* parietalia, orbiculata, complanata, margine membranacea.

Herbæ (Europæ et Asiæ frigidioris) *perennes*. *Folia nervosa, quandoque alternata!* *Flores terminales et axillares, subsolitarii v. racemoso-paniculati, cœrulei aut lutei.*

A very natural and well-defined group, consisting of *Swertia perennis*, *obtusâ*, and the species here described, and characterized by its flat orbicular winged seeds, and by the fringed nectariferous glands at the base of the petals. Nearly related to this genus are *Asterias* (*Gentiana lutea*, L.) and *Frasera*, the former distinguished by the naked glands of its petals, and long narrow stigma, and the latter by its deciduous corolla and marginal placentation.

The *S. obtusa* and *alternifolia* exhibit in their alternate leaves a remarkable peculiarity in this family, closely approximating by this character and also by their fringed petals to the *Menyantheæ*.

1. *S. speciosa*, foliis oppositis connato-vaginantibus elliptico-oblongis acuminatis 7-nerviis, floribus racemoso-paniculatis, corollæ segmentis acuminatis: glandulis connatis.

Swertia speciosa. *Wall. Cat. n. 4384.*

S. perfoliata. *Royle MSS. Don Syst. Gard. & Bot. iv. p. 176.*†

Habitat in Cashmeriâ, et in Emodi montibus ad Choor et Kedarkanta, Royle. 2.

Herba perennis, magnitudine et facie *Asteriæ luteæ*. *Radix* crassa, fusiformis, horizontalis, sordidè flava, fibris longis crassis. *Caulis* erectus, ramosus, teres, 3-pedalis et ultrà, digiti minoris crassitie. *Folia* opposita, elliptico-oblonga, acuminata, 7-nervia, glabra, lævissima, spithamæa, latitudine 3-uncialia; *inferiora* petiolata, petiolis dilatatis, basi connato-vaginantibus; *superiora* sessilia, basi connata. *Flores* copiosissimi, racemoso-paniculati, cernui. *Pedunculi* filiformes, semi- v. pollicares, basi bracteâ lanceolatâ acuminatâ longiore muniti. *Calyx* 5-partitus: *segmentis* lanceolatis, acuminatis, glabris, patentibus, membranaceis. *Corolla* calyce longior, 5-partita, rotata: *segmentis* lanceolatis, obtusè acuminatis, basi bisorbiculatis: *scrobiculis* 2, subrotundis, parallelo-connatis, periphæriâ ciliis longis fimbriatis. *Stamina* 5, corollâ breviora: *filamenta* subulata, canaliculata: *antheræ* oblongæ, obtusæ, biloculares, incumbentes: *loculis* parallelis, longitudinalitèr dehiscentibus, basi solutis. *Ovarium* ovatum, 1-loculare. *Stylus* brevissimus. *Stigma* bilobum: *lobis* planis, suborbiculatis, minutè papillosis.

2. *S. petiolata*, foliis oppositis petiolatis oblongis obtusis 5-nerviis, floribus racemoso-paniculatis, corollæ segmentis obtusis: glandulis distinctis filamentoso-ciliatis.

Swertia petiolata. Royle MSS.

S. speciosa. G. Don Syst. Gard. & Bot. iv. p. 170. non Wall.

Habitat in Cashmeriâ. Royle. 4.

Herba perennis. *Caulis* erectus, dodrantalis pedalisve, lævis. *Folia* opposita, petiolata, spathulato-oblonga, obtusa, 5-nervia, basi attenuata, 2-pollicaria, semunciam lata. *Petoli* lineares, basi connato-vaginantibus, sæpè 3-pollicares. *Panicula* coarctata, racemosa, multiflora. *Calyx* 5-partitus: *segmentis* lanceolatis, acuminatis, margine membranaceis, inæqualibus. *Corolla* rotata, 5-partita, lutea, calyce ferè duplò longior: *laciniis* oblongis, obtusis: *scrobiculis* 2, orbiculatis, distinctis, periphæriâ ciliis longis capillaceis fimbriatis. *Stamina* 5, corollâ breviora: *filamenta* canaliculata, basi dilatata: *antheræ* oblongæ, incumbentes, 2-loculares, obsoletè mucronulatæ. *Ovarium* ovatum. *Stylus* vix ullus. *Stigma* bilobum: *lobis* orbiculatis, complanatis, minutè papillosis. *Capsula* ovato-oblonga, membranacea, 1-ocularis. *Semina* majuscula, angulata! corrugato-cristata, fusca.

3. *S. alternifolia*, foliis alternis! elliptico-oblongis acuminatis 7-nerviis basi vaginantibus, floribus racemoso-paniculatis, corollæ segmentis ellipticis obtusis: glandulis orbiculatis contiguis.

Swertia alternifolia. Royle, *Ill. t. 67. f. 2.* Nob. in *G. Don Syst. Gard. & Bot.* iv. p. 176.

Habitat in Emodi montibus ad Choor et Kedarkanta. Royle. 4.

Herba perennis, glabra. *Caulis* erectus, ramosus, cylindraceus, fistulosus, lævis, 2—3-pedalis, crassitie calami scriptorii. *Folia* elliptico-oblonga, acuminata, 5—7-nervia, membranacea, lævissima, lætè viridia, margine scabriuscula, 4—5 pollices longa, et 2 lata; *radicalia* petiolata; *caulina* alterna, amplexicaulia, breviterque vaginantia: *vagina* dilatata, semipollicari. *Petioles* dilatati, suprà canaliculati, margine alati, 3-pollicares. *Flores* axillares, magni, aurei, cernui, cymosi, in caulis summitate subsolitarii. *Cymæ* longè pedunculatæ, 3-floræ, per caulem racemoso-paniculatæ. *Pedunculi* filiformes, 3-unciales. *Bracteæ* lanceolatæ, acuminatæ, sessiles, sæpè oppositæ, pedicellis breviores. *Segmenta calycina* ovato-lanceolata, acuminata, 5-nervia, margine tenuissimè membranacea, crosèque crenulata. *Corolla* rotata, 5-partita, calyce longior: *laciniis* elliptico-oblongis, obtusis, 7-nerviis, basi biscrebiculatis: *scrobiculis* orbiculatis, contiguis, margine longè crebrèque filamentoso-fimbriatis: *ciliis* longis, subulatis, acutissimis, patentibus. *Stamina* corollâ duplò breviora: *filamenta* dilatata, canaliculata, glabra: *antheræ* oblongæ, incumbentes, biloculares: *loculis* parallelis, longitudinalitèr dehiscentibus, basi solutis. *Orarium* ovale, læve. *Stigma* sessile, bilobum: *lobis* orbiculatis, margine revolutis, minutè papilloso-pruinosis.

4. *S. cuneata*, foliis oppositis petiolatis spathulato-oblongis obtusis 5-nerviis, floribus racemosis, corollæ segmentis obtusis: glandulis lineari-oblongis subremotis filamentoso-ciliatis.

Swertia cuneata. Wall. *Cut. n. 4380.* Nob. in *G. Don Syst. Gard. & Bot.* iv. p. 176.

Habitat in Emodi montibus ad Kedarkanta. Royle. 4.

Radix fibrosa, perennis, sordidè flava. *Caulis* erectus, filiformis, lævis, 3—8-uncialis. *Folia* opposita, petiolata, oblongo-spathulata, obtusa, glabra,

3-nervia, membranacea, subtùs pallidiora, infernè attenuata, cum petiolis membranaceo-dilatatis 2—4-uncialia, semunciam lata; *radicalia* et *caulina inferiora* longiùs petiolata; *suprema* lineari-oblonga, subsessilia. *Flores* laxi, racemoso-paniculati. *Pedunculi* filiformes, purpurascens, semi- v. pollicares. *Calyx* profundè 5-partitus: *segmentis* linearibus, acutis, 3-nerviis. *Corolla* dilutè cœrulea, rotata, altè 5-partita; *segmentis* elliptico-oblongis, obtusis, emarginatis, 5-nerviis, margine involutis, calyce duplò longioribus: *scrobiculis* linearibus, distantibus, periphæriâ ciliis longis capillaribus cœruleis fimbriatis. *Stamina* 5, corollâ breviora: *filamenta* canaliculata: *antheræ* oblongæ, obtusæ, incumbentes, azureæ. *Ovarium* fusiforme, longitudine staminum. *Stigma* bilobum: *lobis* rotundatis, planiusculis, minutè papillosis.

5. *S. cœrulea*, floribus subsolitariis, corollæ segmentis ovatis mucronulatis: glandulis linearibus distantibus, foliis inferioribus spathulatis petiolatis; superioribus calycibusque lanceolatis obtusiusculis.

Swertia cœrulea. Royle Ill. t. 67. f. 1. Nob. in G. Don Syst. Gard. & Bot. iv. p. 176.

Habitat in Cashmeriâ, atque in Emodi montibus ad Mussooree et Shalma. Royle. 4.

Herba perennis, glabra. *Caules* erecti, graciles, obscurè tetragoni, purpurascens, spithamæi. *Folia* membranacea, 3—5-nervia; *inferiora* petiolata (petiolis imâ basi vaginantibus), spathulata, obtusa; *superiora* sessilia, imâ basi connata, lanceolata, subconduplicata, apice recurvata, acuta, pollicaria. *Flores* racemosi, speciosi, azurei. *Pedunculi* axillares, solitarii, uniflori, unciales, subtetragoni, nunc rariùs trichotomi, 3-flori, medio bibracteati; *superiores* ebracteati, omninò uniflori. *Bracteæ* lineari-lanceolatæ, conduplicatæ, apice recurvatæ, acutæ. *Calyx* altè 5-partitus: *laciniis* lanceolatis, acutis, 3-nerviis, apice subrecurvis, ferè semipollicaribus. *Corolla* calyce multoties longior, profundè 5-partita: *segmentis* ovato-oblongis, obliquè mucronulatis, 7-nerviis (nervis ramosis), ungue flavicanti, bicrobiculato: *scrobiculis* linearibus, distantibus, margine supernè filamentoso-fimbriatis: *ciliis* angustè linearibus, obtusis, compressis. *Stamina* corollâ breviora: *filamenta* subulata, canaliculata,

glabra: *antheræ* oblongæ, biloculares: *loculis* parallelis, longitudinalitèr dehiscentibus, basi apiceque solutis. *Ovarium* obfusiforme, staminibus longius. *Stigma* terminale, sessile, parvum, levitèr bilobum. *Capsula* cuneato-oblonga, compressa, 2-valvis, basi attenuata, polysperma: *valvis* membranaceis, margine incrassatis, medio tantùm seminiferis. *Semina* minutissima, obovata, lævia, basi umbilico prominenti mucronata.

Gen. VI. AGATHOTES.

SWERTIÆ SP. *Wall.*

GENTIANÆ SP. *Roxb.*

Calyx 4-partitus. *Corolla* rotata, 4-partita: *segmentis* basi foveis nectariferis squamulâ fimbriatâ obtectis instructis. *Stigma* bilobum. *Capsula* 1-locularis, apice dehiscens. *Semina* marginalia, minuta, globosa, lævia.

Herbæ (himalenses) *annuæ*, *ramosæ*. *Folia opposita*, *amplexicaulia*. *Flores laxè paniculati*, *purpurei v. lutei*.

Besides habit and the four-cleft flowers, the minute globular seeds, their placentation on the margin of the valves, and the glands at the base of the petals being covered by a fringed scale, are the characters which have led me to separate this genus from *Swertia*.

1. *A. Chirayta*, caule tereti, foliis ovato-lanceolatis, foveis nectariferis oblongis distinctis: squamulis margine capillaceo-fimbriatis.

Agathotes Chirayta. *Nob. in G. Don Syst. Gard. & Bot.* iv. p. 182.

Swertia Chirata. *Wall. Cat. n.* 4372.

S. racemosa. *EjUSD. l. c. n.* 4377.

Gentiana Chirayta. *Roxb. MSS. Fleming in Asiat. Res.* xi. p. 167. *Ræm. et Schult. Syst.* vi. p. 142. *Wall. Pl. Asiat. Rar.* iii. p. 33. t. 252.

G. floribunda. *Don Prodr. Fl. Nep.* p. 128.

Habitat in Emodi montibus ad Mussooree. *Royle*. ☉. *Cherayita et Dukhuni Cherayita indigenis*.

Herba atrovirens. *Radix* ramoso-fibrosa, annua. *Caulis* erectus, ramosus, rigidus, cubitalis, crassitie pennæ corvinæ, intùs cavus. *Folia* amplexicaulia, ovato-lanceolata, acuminata, 7-nervia, membranacea, atro-viridia,

utrinque lævissima, 3—5-uncialia, unciam v. sesquiunciam lata. *Flores* copiosissimi, laxè paniculati, lurido-purpurei. *Pedicelli* graciles, quadranguli, unguiculares. *Calyx* profundè 4-partitus: *segmentis* linearilanceolatis, acuminatis, apice recurvis. *Corolla* calyce paullò longior, 4-partita: *laciniis* ovatis, acutis, basi foveis 2 nectariferis oblongis parallelo-contiguïs squamulâ fimbriatâ tectis auctis. *Stamina* corollâ breviora: *filamenta* subulata, canaliculata, glabra: *antheræ* cordatæ, obtusæ. *Ovarium* ovatum, læve, apice in stylum attenuatum. *Stigma* bilobum: *lobis* obtusis, brevissimis, pruinosis. *Capsula* membranacea, 1-locularis: *valvis* margine placentiferis, hinc apice bifidis. *Semina* minuta, lævia.

The whole plant possesses an agreeable aromatic bitter, much more pleasant than that of Gentian root or *Erythraea Centaurium*. The dried herb yields the most valuable kind of Cherayita, denominated "Dukhuni Cherayita," so famed among Indian practitioners as a tonic. Samples of the dried herb, obtained by Dr. Royle from the bazaars of India, leave no doubt of the present species affording the sort above mentioned.

2. *A. alata*, caule tetragono alato, foliis ovatis, foveâ nectariferâ orbiculatâ: squamulâ rotundatâ fimbriatâ.

Agathotes alata. *Nob. in G. Don Syst. Gard. & Bot.* iv. p. 177.

Swertia alata. *Royle MSS.*

Habitat in Emodi montibus ad Choor. *Royle.* ☉.

Radix ramoso-fibrosa, annua. *Caulis* erectus, ramosus, rigidus, tetragonus, angulis membranaceis, alatis. *Folia* opposita, sessilia, subamplexicaulia, ovato-oblonga, obtusa, 5-nervia, subcoriacea, pollicaria, basi per caulis angulos decurrentia. *Flores* paniculati, flavi? *Bractææ* lineares, acutæ, margine revolutæ. *Pedicelli* brevissimi, 4-anguli, graciles. *Calyx* profundè 4-partitus: *segmentis* lanceolatis, mucronatis, glabris, apice recurvato-patentibus. *Corolla* calycis vix longitudine, 4-partita: *laciniis* ovatis, acutis, basi foveolâ orbiculatâ margine puberulâ squamulâ unicâ ciliatâ tectâ. *Stamina* corollâ breviora: *filamenta* subulata: *antheræ* oblongo-cordatæ, obtusæ, biloculares. *Ovarium* ovatum, in stylum attenuatum. *Stigma* bilobum: *lobis* orbiculatis, pruinosis. *Capsula* ovata, 1-locularis: *valvis* margine placentiferis. *Semina* minuta, lævia.

Gen. VII. OPHELIA.

SWERTIÆ SP. *Ham., Wall.*

Calyx 4—5-partitus. *Corolla* rotata, 4—5-partita. *Glandulæ nectariferæ* ad laciniarum basin 2, omninò nudæ! *Stigma* bilobum. *Capsula* membranacea, 1-locularis, apice dehiscens. *Semina* marginalia, minuta, angulata, scrobiculata.

Herbæ (Indiæ orient.) *annuæ, ramosæ, floribus paniculatis plerumque luteis v. albis.*

This is a very natural genus essentially distinguished from the preceding by the naked glands at the base of the petals. The species agree with *Agathotes* in their medicinal properties, and afford several kinds of Cherayita.

* *Glandulæ nectariferæ 2 conferruminatæ.*

1. *O. angustifolia*, floribus 4-fidis, foliis petiolatis lineari-lanceolatis acutis, segmentis calycinis linearibus mucronulatis, corollæ laciniis ovatis acuminatis calyce brevioribus.

Ophelia angustifolia. *Nob. in G. Don Syst. Gard. & Bot.* iv. p. 178.

Swertia angustifolia. *Ham. in Don Prodr. Fl. Nep.* p. 127. *Wall. Pl. Asiat. Rar.* iii. p. 2. t. 204.; *Cat. n.* 4373.

Habitat in Emodi montibus ad Mussooree. *Royle.* ☉. Puharee Cherayita *indigenis.*

Radix fibrosa, annua. *Caulis* erectus, ramosus, rigidus, fistulosus, purpuraſcens, levitèr 4-angulus, cubitalis, magis coarctatus quàm in sequente. *Folia* brevissimè petiolata, lineari-lanceolata, acuta, 3-nervia, suprà viridia, subtùs pallidiora, glaucescentia, basi attenuata, utrinque glaberrima, sesqui- v. bi-pollicaria. *Flores* laxè paniculati. *Pedunculi* capillares, breves, tetragoni. *Calyx* 4-partitus: *segmentis* lineari-lanceolatis, acutis. *Corolla* 4-partita, calyce longior, alba, punctis violaceis copiosè notata: *laciniis* ovato-oblongis, mucronulatis, basi biglandulosis, nudis. *Stamina* 4, corollâ breviora: *filamenta* gracilia, subulata, glabra: *antheræ* cordatæ, obtusæ, incumbentes, biloculares. *Ovarium* staminum longitudine, ellip-

tico-oblongum, 1-loculare, apice in stylum attenuatum. *Stigma* bilobum, minutè papillosum. *Capsula* 1-locularis: *valvis* subcrustaceis, margine placentiferis. *Semina* exigua, angulata, scabra, atrofusca.

The herb is intensely bitter, more resembling the Gentian root than the *Agathotes Chirayta*. It is the "Puharee, or hill Cherayita," and is clearly much more powerful than the former.

2. *O. pulchella*, floribus 4-fidis, foliis lanceolato-linearibus acutis, segmentis calycinis lanceolatis acuminatis, corollæ laciniis ovatis mucronulatis calyce longioribus, caule tetragono.

Ophelia porrigens. *G. Don Syst. Gard. & Bot.* iv. p. 178.

Swertia pulchella. *Ham. MSS. Wall. Cat. n.* 4375.

β. minor, staturâ vix 3-pollicari, foliis parùm latioribus obtusiusculis.

S. elegans. *Wall. Cat. n.* 4376.

Habitat in Emodi montibus ad locum Khiree Pass Anglicè dictum; *β.* ad Mussooree. *Royle.* ☉.

Radix fibrosa. *Caulis* erectus, ramosus, rigidus, tetragonus, intùs canali perangusto cavus, glaber. *Folia* subsessilia, lineari-lanceolata, acuta, 3-nervia, membranacea, glaberrima, lætè viridia, subtùs pallidiora, margine paululùm revoluta, sesqui- v. bi-pollicaria; *inferiora* basi attenuata, vix petiolata. *Flores* laxè paniculati. *Pedunculi* 4-angulares, graciles, semunciales. *Calyx* profundè 4-partitus: *segmentis* lanceolatis, acuminatis, glaberrimis. *Corolla* calyce plerumque longior, 4-partita, lutea: *laciniis* ovato-oblongis, mucronulatis, patulis, 3-nerviis, nervis ramosissimis. *Stamina* 4, corollâ breviora: *filamenta* subulata, glabra: *antheræ* cordatæ, obtusæ, incumbentes, biloculares. *Ovarium* ovatum, læve. *Stylus* vix ullus. *Stigma* bilobum: *lobis* brevissimis, rotundatis, minutè papillois. *Capsula* ovato-oblonga, membranacea, 1-locularis, valvularum marginibus placentiferis. *Semina* exigua, angulata, spadicea, lævia.

This is closely related to the preceding species, being principally distinguished from it by the corolla exceeding the calyx in length.

3. *O. paniculata*, floribus 5-fidis, foliis linearibus scabris margine revolutis,

petiolis ciliatis, segmentis calycinis lanceolatis acuminatis, corollæ laciniis ovato-lanceolatis acuminatis calyce vix longioribus, caule tereti.

Ophelia Wallichii. *G. Don Syst. Gard. & Bot.* iv. p. 178.

Swertia paniculata. *Wall. Pl. Asiat. Rar.* iii. p. 3. t. 205.; *Cat. n.* 4374.

Habitat in Emodi montibus ad Mussooree. *Royle.* ☉.

Radix fibrosa. *Caulis* erectus, ramosus, teres, angulis 2 obsoletissimis notatus, purpurascens, cubitalis, ad nodos papilloso-pubescens. *Rami* levissimè 4-anguli. *Folia* subpetiolata, lanceolato-linearia, acuta, 3-nervia, margine revoluta, suprâ viridia, asperiuscula, præsertim in junioribus, subtùs glauca, basi apiceque angustata, subpetiolata, parùm ciliata, sesqui- v. bi-pollicaria. *Flores* cymosi, paniculati. *Pedunculi* aggregati (3 v. 6), subcapillares, levitèr 4-anguli, apice incrassati, semi- v. pollicares. *Calyx* turbinatus, 5-partitus, papilloso-scabriusculus: *segmentis* lanceolatis, acuminatis, margine revolutis, 3-nerviis; 2 exterioribus majoribus. *Corolla* alba, calycis vix longitudine, 5-partita: *laciniis* ovatis, acuminatis, 5-nerviis, basi biglandulosis, lævibus. *Stamina* 5, corollâ breviora: *filamenta* subulata, glabra, omninò libera, purpurea, infernè dilatata, planiuscula, apice acuminata: *antheræ* incumbentes, cordatæ, biloculares, violacæ. *Ovarium* ovatum, attenuatum, 1-loculare. *Stylus* elongatus. *Stigma* bilobum, minutè papillosum. *Capsula* membranacea, bivalvis. *Semina* minuta, lenticularia, lævia, fulvescentia.

4. *O. purpurascens*, floribus 5-fidis, foliis lanceolatis acuminatis 3-nerviis scabris, petiolis ciliatis, segmentis calycinis lanceolatis mucronatis, corollæ laciniis ovato-lanceolatis acuminatis basi bituberculatis calyce longioribus, filamentis basi connatis, caule teretiusculo.

Ophelia teres. *G. Don Syst. Gard. & Bot.* iv. p. 178.

Swertia purpurascens. *Wall. Cat. n.* 4379.

β. *ciliata*, vix spithamæa, magis papillosa; foliis brevioribus.

Ophelia ciliata. *G. Don Syst. Gard. & Bot.* iv. p. 178.

Swertia ciliata. *Royle MSS.*

Habitat in Emodi montibus ad Choor et Kedarkanta. *Royle.* ☉.

Radix fibrosa, annua. *Caulis* erectus, paniculatim ramosus, purpurascens, cubitalis, obtusè tetragonus, ad nodos præsertim papilloso-scaber. *Folia*

lanceolata, acuta, 3-nervia, suprâ asperiuscula, viridia, subtùs pallidiora, sesqui- v. bi-pollicaria, basi attenuata, ciliata, subpetiolata. *Flores* cymosi, paniculati. *Pedunculi* aggregati (3 v. 6), capillares, vix pollicares, apice simplici. *Calyx* 5-partitus: *segmentis* lanceolatis, acutis, subæqualibus. *Corolla* calyce longior, 5-partita: *laciniis* ovato-lanceolatis, acutis, pallidè purpureis, basi bituberculatis, glabris. *Stamina* corollâ breviora: *filamenta* subulata, basi connata, monadelphæ! *antheræ* cordato-oblongæ, incumbentes, biloculares. *Pistillum* stamina superans: *ovarium* ovato-oblongum: *stylus* elongatus: *stigma* bifidum: *lobis* cuneatis, recurvatis, minutè papillosis. *Capsula* membranacea, 1-locularis, 2-valvis. *Semina* parva, lenticularia, fusca, hinc concava, subindè convexiuscula.

5. *O. cordata*, floribus 5-fidis, foliis sessilibus cordatis acutis 5-nerviis, segmentis calycinis ovato-lanceolatis acuminatis, corollæ laciniis oblongis obtusiusculis calyce brevioribus.

Ophelia cordata et *Chirayta*. *G. Don Syst. Gard. & Bot.* iv. p. 178.

Swertia cordata. *Wall. Cat. n.* 4378.

Habitat in Cashmeriâ ad Jhilam, et in Emodi montibus ad Mussooree. *Royle*. ☉.

Radix fibrosa, annua. *Caulis* erectus, ramosus, 4-angulus, purpurascens. *Folia* opposita, amplexicaulia, ovata, acuta, 5-nervia, membranacea, glabra, pollicaria. *Flores* paniculati. *Pedicelli* graciles, 4-anguli, vix semipollicares. *Calyx* 5-partitus: *segmentis* lanceolatis, acutis, glabris. *Corolla* pallidè flava, calyce longior: *laciniis* oblongis, obtusis, basi bifoveolatis, nudis. *Stamina* corollâ breviora: *filamenta* gracilia: *antheræ* violaceæ, incumbentes: *loculis* longitudinalitèr dehiscentibus, basi solutis. *Pistillum* staminibus brevius: *ovarium* fusiforme: *stigma* bilobum: *lobis* orbiculatis, pruinosis. *Capsula* ovato-oblonga, membranacea: *valvis* margine placentiferis. *Semina* angulata, fusca, scrobiculata.

** *Glandulæ nectariferæ* 2 oblongæ distinctæ.

6. *O. lurida*, floribus 4-fidis, foliis superioribus cordatis acutis amplexicaulibus, segmentis calycinis lineari-lanceolatis mucronulatis, corollæ laciniis ovatis acuminatis calyce longioribus.

Ophelia lurida (malè lucida). *Nob. in G. Don Syst. Gard. & Bot.* iv. p. 179.

Swertia lurida. *Royle MSS.*

Habitat in Emodi montibus ad Mussooree. *Royle.* ☉.

Herba amarissima. *Radix* fibrosa, annua, flava. *Caulis* erectus, rigidus, ramosissimus, tetragonus, fistulosus, glaber, viridis, bipedalis: *angulis* elevatis, membranaceis, angustissimis. *Folia radicalia* petiolata, spathulata, obtusa, patentia, sesquipollicaria; *caulina superiora* et *ramea* amplexicaulia, cordata, acuta, 5-nervia; *infima* oblonga, basi angustata, caulis apicem versus sensim minora. *Flores* parvi, copiosissimi, paniculati. *Calyx* 4-partitus: *segmentis* lanccolatis, acutis. *Corolla* calyce subduplò longior, lurido-purpurea, 4-partita: *laciniis* ovato-lanceolatis, acuminatis, 5-nerviis, basi biglandulosis, glabris: *glandulis* linearibus, distantibus. *Stamina* 4, corollâ breviora: *filamenta* subulata, glabra: *antheræ* cordatæ, mucronulatæ. *Pistillum* staminibus longius: *ovarium* ovatum, membranaceum, 1-loculare: *stylus* brevis: *stigmata* subcapitata, minutè papillosa. *Capsula* pàrva, ovata, membranacea. *Semina* exigua, angulata, lævia, pallidè fulva.

Gen. VIII. HALENIA. *Borck.*

SWERTIÆ SP. *L. et Auctt.*

Calyx 4—5-partitus. *Corolla* campanulata v. tubulosa, 4—5-fida: *laciniis* basi calcaratis! *Stamina* sinubus corollæ inserta. *Stigma* bilobum. *Capsula* sessilis, membranacea, 1-ocularis. *Semina* marginalia, subrotunda v. oblonga, ventricosa, lævia.

Herbæ (asiaticæ et americanæ) *annuæ* v. *perennes*, *floribus umbellatis purpureis* v. *luteis*.

This constitutes one of the most distinct genera in the whole family. The petals, in place of having the fringed glands of *Swertia*, are produced behind into a hollow spur, which forms an obvious and beautiful mark to discriminate the genus from the rest of its coordinates. Of the twelve species known to us, two are Asiatic, and the rest American; and of these latter, five are natives of Peru and New Granada, and perennial.

1. *H. elliptica*, corollis campanulatis 4-fidis calcaribus filiformibus brevioribus, laciniis calycinis obtusis abbreviatis, foliis ellipticis obtusis 5-nerviis; inferioribus petiolatis.

Halenia elliptica. Nob. in *G. Don Syst. Gard. & Bot.* iv. p. 177.

Swertia centrostemma. *Wull. Cat. n.* 4385.

Habitat in Emodi montibus ad Choor et Kedarkanta. *Royle*. ☉.

Radix fibrosa, annua. *Caulis* erectus, ramosus, tetragonus, angulis angustè alatis, pedalis v. bipedalis, fistulosus. *Folia* opposita, elliptica, obtusa, glaberrima, 5-nervia, membranacea, uncialia, v. biuncialia; *inferiora* breviter petiolata. *Pedicelli* aggregati (3 v. 6), cymosi, pollicares v. bipollicares, capillares, 4-anguli, uniflori. *Bracteæ* ovato-lanceolatæ, obtusæ. *Calyx* 4-partitus: *laciniis* ovato-lanceolatis, acutiusculis. *Corolla* calyce longior, campanulata, 4-fida: *laciniis* ellipticis, mucronatis, conniventibus, posticè basi calcaratis: *calcaribus* filiformibus, obtusis, rectis, patentibus, calyce longioribus. *Stamina* 4, corollâ longiora: *filamenta* subulata, glabra: *antheræ* cordatæ, biloculares. *Ovarium* ovatum. *Stylus* longiusculus. *Stigma* bilobum, pruinatum. *Capsula* membranacea. *Semina* majuscula, elliptica, compressa, lævia, brunnescentia, hinc plana, inde leviter exsculpta.

Gen. IX. ERYTHRÆA. *Renealm., Brown.*

CHIRONIÆ SP.

GENTIANÆ SP. *L.*

Calyx 5-fidus. *Corolla* infundibuliformis, limbo brevi, marcescens. *Antheræ* defloratæ spirales. *Stylus* erectus. *Stigma* 2, subrotunda. *Capsula* linearis. *Brown, Prodr.* i. p. 451.

1. *E. Roxburghii*, floribus pedunculatis corymbosis, corollæ laciniis lanceolatis acutis: tubo calycis longitudine, foliis superioribus linearibus 3-nerviis, caule quadrangulo.

Erythræa Roxburghii. *G. Don Syst. Gard. & Bot.* iv. p. 206.

Chironia centaureoides. *Roxb. Fl. Ind.* i. p. 584. *Wall. Cat. n.* 4397.

Habitat in Emodi montibus ad locum Khiree Pass Anglicè dictum. *Royle*. ☉.

Fl. Octobri.

Gen. X. CANSCORA. *Lam., Brown.*PLADERA. *Soland., Roxb.*CENTAURIUM. *Borck.*EXACI SP. *Willd.*GENTIANÆ SP. *Vahl.*

Calyx tubulosus, 4-dentatus. *Corolla* infundibuliformis, marcescens: *limbo* brevi, inæquali, 4-fido, subbilabiato. *Stamina* 3 v. 4, inæqualia. *Antheræ defloratæ* strictæ. *Stylus* rectus. *Stigmata* 2, cuneata, revoluta. *Capsula* 1-locularis. *Placentæ* marginales. *Semina* subrotunda, scrobiculata, minutissima.

Herbæ (Indiæ Orient.) *annuæ*, *caule ramosissimo*, *floribus corymboso-paniculatis rubris*.

1. *C. diffusa*, caule subfiliformi, foliis inferioribus spathulatis petiolatis; superioribus sessilibus ovatis acutis, calycibus tubulosis apteris.

Canscora diffusa. *Brown Prodr.* i. p. 451. *G. Don Syst. Gard. & Bot.* iv. p. 199. *Wall. Cat. n.* 4361.

C. tenella. *Wall. Cat. n.* 4362.

C. foliosa. *Nob. in G. Don Syst. Gard. & Bot.* iv. p. 199.

Pladera virgata. *Roxb. Fl. Ind.* i. p. 401.

Exacum diffusum. *Willd. Sp. Pl.* i. p. 637.

Gentiana diffusa. *Vahl. Symb.* iii. p. 47.

Habitat in Emodi montibus ad locum Khiree Pass Anglicè dictum. *Royle.* ☉. *Fl.* Octobri.

2. *C. decussata*, caule tetragono alato, foliis sessilibus ovato-lanceolatis acutis 3-nerviis; superioribus distinctis, floribus pedunculatis, calycibus tetrapteris inflatis.

Canscora decussata. *Wall. Cat. n.* 4364. *G. Don Syst. Gard. & Bot.* iv. p. 199.

Pladera decussata. *Roxb. Fl. Ind.* i. p. 402.

Habitat cum præcedente. *Royle.* ☉. *Fl.* Julio.

3. *C.? pusilla*, caule tetragono, foliis cordatis acutis sessilibus, floribus glom-

ratis, corollâ campanulatâ calyce brevior, stigmatibus globosis, capsulâ subrotundâ.

Canscora pusilla. *Wall. Cat. n.* 4366. *G. Don Syst. Gard. & Bot.* iv. p. 199.

Pladera pusilla. *Roxb. Fl. Ind. i.* p. 403.

Hopea dichotoma. *Vahl. En. i.* p. 3.

Exacum sessile. *Willd. Sp. Pl. i.* p. 635.

Habitat circa urbem Dehli. *Royle.* ☉.

As we have before observed, an evident affinity is established between the *Scrophularineæ* and *Gentianeæ* by means of this genus, which comes near to the *Gratiolææ* both in habit and structure, as may be seen by comparing *C. decussata* with *Torenia asiatica*. The *C. pusilla* departs from the rest of the genus by its globular stigmata and by the form of its calyx and corolla, and on these accounts it would seem to constitute the type of a distinct group, to which the name of *Hopea* ought to be restored.

Gen. XI. EXACUM. *Brown.*

EXACI SP. *L.*

Calyx 4-fidus. *Corolla* rotata, 4-fida, marcescens: tubo ventricoso. *Stamina* 4, exserta, declinata: filamenta teretia: antheræ elongatæ, apice ecallosæ, rimâ brevi dehiscentes; defloratæ strictæ. *Stylus* declinatus. *Stigma* indivisum, clavatum. *Capsula* globosa, crustacea, 2-locularis: valvis margine introflexis. *Placentæ* 2, spongiosæ, septo completo adnatæ, demùm utrinque liberæ. *Semina* minutissima, scrobiculata.

Herbæ (Indiæ Orient.) annuæ, erectæ, ramosæ, foliis oppositis subsessilibus 3—5-nerviis, floribus axillaribus terminalibusque luteis v. purpureis.

1. *E. pedunculatum*, diffusum; foliis petiolatis oblongis 3-nerviis, calycibus tubum corollæ subæquantibus.

Exacum pedunculatum. *Linn. Sp. Pl.* p. 163. *Willd. Sp. Pl. i.* p. 634. *Wall. Cat. n.* 4359.

Habitat in Indiâ orientali ad Nourungabad. ☉.

2. *E. tetragonum*, strictum; foliis subamplexicaulibus ovato-lanceolatis acutis 5-nerviis, floribus 4-fidis, calycibus corollæ tubo multò longioribus, genitalibus declinatis.

Exacum tetragonum. Roxb. *Fl. Ind.* i. p. 398. Wall. *Cat.* n. 4356.

β. *roseum*, foliis parùm angustioribus, floribus roseis.

Exacum roseum. Royle *Ill.* p. 276.

E. tetragonum. Don *Prodr. Fl. Nep.* p. 128.

E. Hamiltonii. G. Don *Syst. Gard. & Bot.* iv. p. 213.

Habitat in Emodi montibus ad Khiree Pass et Kedarkanta. Royle. ☉. Fl. Junio et Augusto.

Gen. XII. SLEVOGTIA. Reichenb.

ADENEMA. G. Don.

GENTIANÆ SP. L.

EXACI SP. Willd.

Calyx tubulosus, 5-dentatus. *Corolla* infundibuliformis: limbo 5-fido, æstivatione induplicatâ, subvalvatâ! *Stamina* 5, inclusa: filamenta subulata, basi interiore squamulâ cyathiformi aucta! *antheræ* lineares apiculatæ: *loculis* parallelis, omninò connatis, longitudinalitèr dehiscentibus. *Stigma* capitatum, indivisum. *Capsula* ovata, crustacea, 1-locularis: *valvis* margine introflexis, placentiferis. *Semina* minuta, globosa, scrobiculata.

Herbæ (Indiæ Orient.) *perennis*, *radice repenti sublignosâ*, *caulibus erectis tetragonis simplicibus*, *foliis sessilibus lineari-lanceolatis acutis 3-nerviis*, *floribus axillaribus sessilibus parvis albis.*

1. *S. verticillata.*

Adenema hyssopifolium. G. Don *Syst. Gard. & Bot.* iv. p. 201.

Gentiana verticillata. Linn. *fil. Suppl.* p. 174. Wall. *Cat.* n. 4396.

Exacum hyssopifolium. Willd. *Sp. Pl.* i. p. 640.

Habitat in ripis Jumnæ fluminis. Royle. 4.

An abstract of the present paper appeared in the Philosophical Magazine for January 1836, and the nomenclature there given is here adopted. I have added the synonyms from the forthcoming volume of my brother's work.